

WILSON MILL BRIDGE

On MD Route 161, spanning Deer Creek,

1.5 miles south of Darlington

Darlington vicinity

Harford County

Maryland

HAER No. MD-106

HAER

MD

13-DARLV,

4-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service

Northeast Region

Philadelphia Support Office

U.S. Custom House

200 Chestnut Street

Philadelphia, P.A. 19106

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Location: On MD Route 161, spanning Deer Creek, 1.5 miles south of
Darlington, Darlington vicinity, Harford County
Maryland

Date of Construction: 1930

Engineer: Maryland State Roads Commission

Architect: unknown

Present Owner: Maryland Department of Transportation, State Highway
Administration

Present Use: Vehicular bridge

Significance: This bridge is part of the Darlington Road, a major north/south
artery, dating from the colonial period, that links the northern,
agrarian, section of Harford County with the southern,
commercial and industrial, sector. It is one of only six
remaining metal truss bridges in Harford County, and one of 26
bridges of the same general structural type throughout the state
road network.

Project Information: An evaluation advised replacement of the structure. To mitigate
the adverse effect, a Memorandum of Agreement among the
Federal Highway Administration, the Maryland State Historic
Preservation Office, the Advisory Council on Historic
Preservation, and the State Highway Administration stipulated
HABS/HAER recordation of the bridge. This documentation
was undertaken to fulfill that stipulation.

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Location:

The Wilson Mill Bridge crosses Deer Creek, about one and one-half miles south of Darlington, on MD Route 161 in Harford County, Maryland. The area surrounding the bridge is wooded with some residential building along the road. The creek where it runs under the bridge is about 150 feet wide. Approximately 100 feet west of the bridge is the Wilson Mill, a custom mill which dates from around the turn of the nineteenth century, and from which the bridge takes its name. The early history of the mill is not precisely documented, but it is considered to be one of the oldest extant mills in Harford County. Deer Creek is fast-flowing and provided water power for numerous mills of all varieties and forges throughout the nineteenth century.

The current bridge is the third known to cross Deer Creek in the vicinity of MD Route 161. Two earlier bridges were wooden covered bridges. The first bridge reportedly crossed the creek directly opposite the miller's house. The second covered bridge was located about 50 feet east of the present roadway on a different alignment. The remains of its stone abutments and wing walls still remain.

Description:

The Wilson Mill Bridge consists of two steel spans supported on concrete abutments and pier. The pier is built on land, probably to prevent its being washed away in the rapidly moving creek during floods; perhaps also to leave the creek fully navigable. The larger span, which crosses the creek, is a Parker through truss, a popular design for longer spans. The Parker truss is a variation of the earlier Pratt truss, having an inclined top chord instead of the straight horizontal top chord of the Pratt truss. The other span is a pony, half-through truss, which is elevated above the bank on the north side of the creek. A pony truss lacks the top struts and lateral bracing. The main Parker truss span is 180 feet long; the shorter span 81 feet long. The concrete deck is about 20 feet wide.

Each span is made up of eight sections. The Parker truss has two diagonal members in the center two sections instead of a single diagonal. It also has an additional horizontal member at the mid-point of the center four sections and was original to the design (see the proposed general plan, July 25, 1930). The vertical clearance at the portal end of the main span is 24 feet, and rises to 34 feet at the center of the span. The junctures of all the members are riveted. The entire structure rests on the lower chords, two stringers, evenly spaced at 6 feet, 2 inches apart, and nine floor beams, also evenly spaced at 22 feet, 6 inches.

The concrete abutment supporting the Parker truss span is 35 feet high; that supporting the pony truss is 21 feet 10.5 inches high. Wing walls extend from both sides of each abutment. The pier on which the two spans meet is 26 feet high. One unexplained feature of the attachment of the spans on the pier is an elevated concrete pod required to attach the pony truss span at the appropriate deck level (see photo).

Historical Background:

MD Route 161 is known locally as the Darlington Road and appears to date from the early nineteenth century. It was an important link between Darlington, an early Quaker settlement, and Level, formerly known as Hopewell Crossroads, from which other roads led to Havre de Grace, Bush, and Bel Air. The road allowed Darlington's farmers to transport their crops, first tobacco and later wheat, to outside markets. The road and its crossing at Deer Creek provided a convenient location in which to establish a mill. The mill played a vital role in the lives of local farmers, who could have their grain converted into flour and meal for themselves and their families, and perhaps have some left over to sell.

Prior to the construction of this steel truss bridge in 1930, at least two earlier wooden covered bridges crossed Deer Creek in the same vicinity. The construction date of the first is unknown; however, it is reported to have been washed away in a spring freshet in 1865 (Mason 1955:63). The second covered bridge, the remains of whose abutments and wing walls remain near the present bridge, was built in 1868. It continued in use until about 1930 or 1931 when the current bridge was completed. (The old covered bridge may be seen in the background in historic photo.)

The Maryland State Roads Commission drew up the plans for the bridge under the direction of their chief engineer. Three separate contracts were awarded to construct the Wilson Mill Bridge. The Forbes and Murphy Construction Company of Baltimore, Maryland, held the contract to construct the abutments and wing walls. The W. W. Truitt Company won the contract to build the roadbed. The company selected to erect the truss superstructure, however, is unknown, as is the company which fabricated the steel members.

Truss bridges had been in existence for many years by the time this bridge was built. Early truss bridges were built of wood and then covered to protect their structural members, as were the two previous covered bridges in this location. The transition between wooden and metal truss bridges was provided by William Howe, who patented his truss design using iron verticals and wood diagonals, in 1840. Further technological advances were made possible by Squire Whipple when, in 1847, he published his treatise on the structural properties of cast and wrought iron, wherein he advocated the use of cast iron for the compressive members and the more flexible wrought iron for the tensile members.

Initially, in the second quarter of the nineteenth century, metal truss bridges were designed for use by the railroads, which required stronger and more reliable bridges to carry their heavy locomotives and rolling stock. As Maryland led in the development of railroads (the first railroad in the United States being the Baltimore and Ohio), it also led in the development of metal truss bridges. From the 1850s on, Baltimore became the center of bridge building activity in the state. Soon, however, other areas and county commissioners took note of the development of the metal truss bridges being designed for the railroads and adapted them for use on highways where other types of bridges had historically failed

(Historic Bridges in Maryland: Historic Context Report, p. 77). It became widely believed that metal truss bridges were superior to the wooden truss, covered bridges for all sorts of crossings. Certainly the ease of their construction, compared to either wooden bridges or stone arch bridges, which represented another and somewhat older alternative method for stream crossings, would promote their use.

Nevertheless, by the turn of the century, reinforced concrete technology had advanced sufficiently that it was being used in bridge building. Again, Baltimore led in the adoption of reinforced concrete for its bridges. This method of construction quickly became the preferred technique, surpassing that of metal truss bridges in Baltimore and Baltimore County. Other parts of the state were slower to accept this new technology, but by the 1920s, it had become a standard form of bridge throughout the state. Metal truss bridges were still being built, but their numbers were rapidly declining. Reinforced concrete bridges were seen as a sturdy, low maintenance alternative that would allow for the greater weight and speed of automobiles and trucks.

The Wilson Mill Bridge, then, was late for a metal truss bridge. Perhaps the rural, agrarian nature of Harford county precluded its swiftly adopting the newer technology. The Darlington Road, (MD Route 161), was traditionally a major north/south artery, linking the northern agricultural part of the county to the southern, more industrial, section. Perhaps the means of transportation necessary to maintain this connection did not require more strength than that provided by a metal truss bridge. In any case, the bridge has survived for more than 60 years with only two instances of significant repair. The first instance was in 1951 and involved repair of the backwalls of the abutments. At that time, the metal truss superstructure required only painting. The second instance took place in 1986, at which time there was evidence of structural steel deterioration. Stringer supports were installed to strengthen the bridge.

The Wilson Mill Bridge is one of only six historic truss bridges remaining in Harford County and one of only 26 such bridges remaining throughout the state. It has been determined to be eligible for listing in the National Register of Historic Places. While the road and its crossing over Deer Creek were important factors in the location of Wilson's Mill, this particular bridge cannot be said to be significant to the mill, which appears to have ceased operation some years before the bridge was built. Moreover, the road was significantly realigned at the crossing when this bridge was constructed in 1930, which has deprived it of much of its integrity.

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Source: Martenet's Map of Harford County, 1878

Project Area in 1878

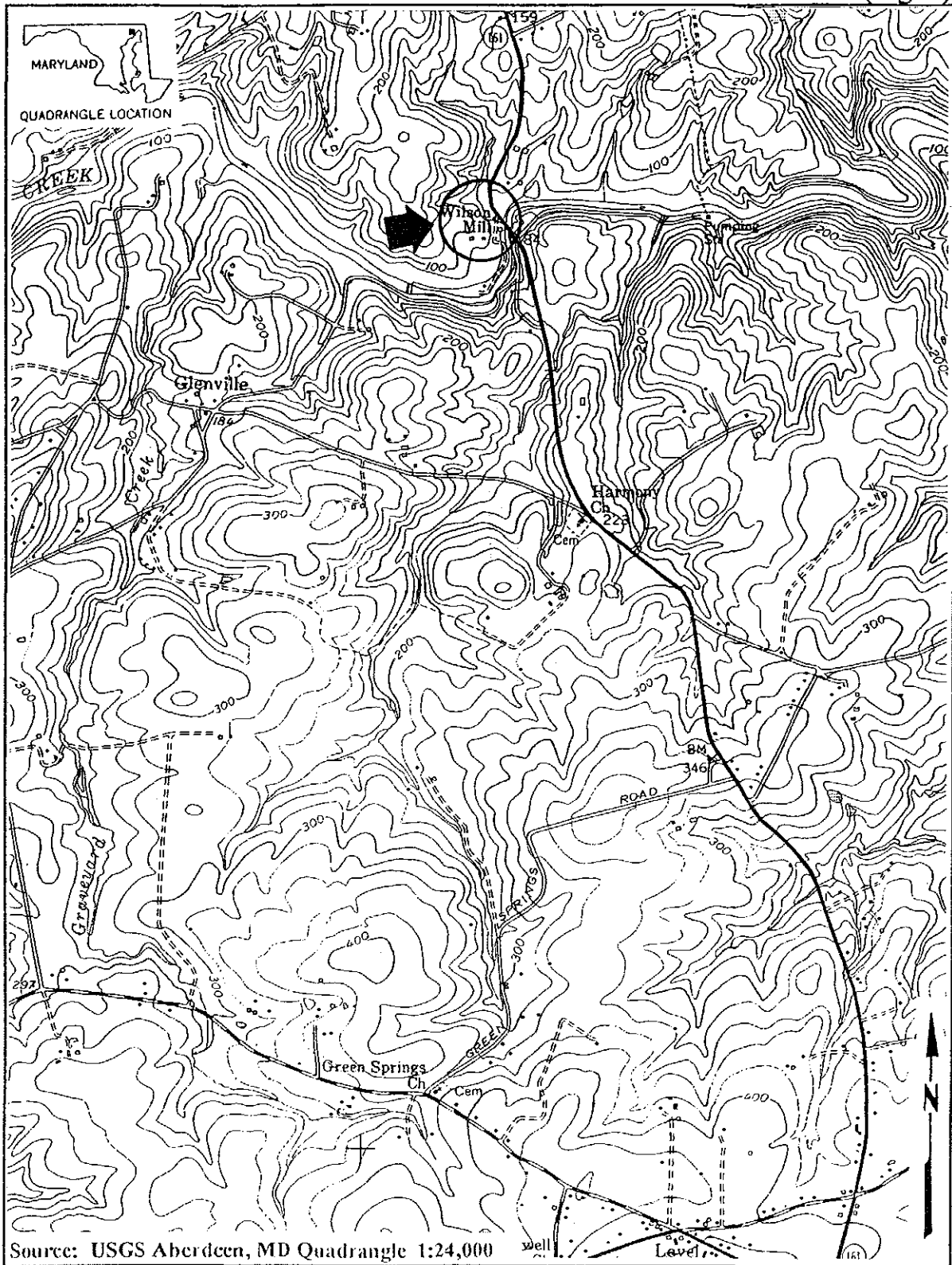
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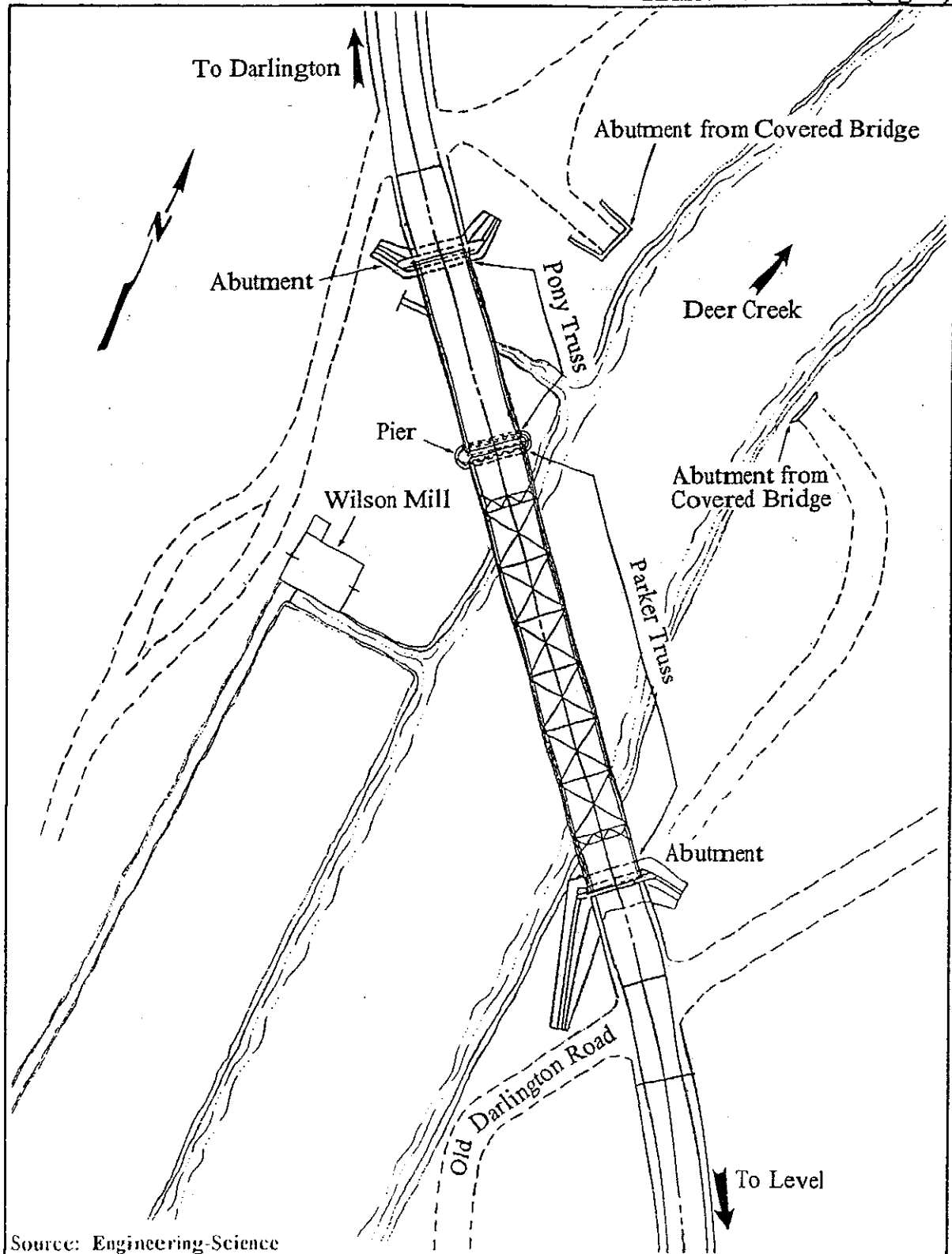
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1994 Project Location

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Source: Engineering Science

Site Plan